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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NEGRON, DANIEL L

ART UNIT PAPER NUMBER

2651

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,669

Applicant(s)

LEWKOWICZ ET AL.

Examiner

Daniell L. Negrón

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 11-14, 18-26, 29, and 33-45, are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura U.S. Patent No. 5,831,781 in view of Shu U.S. Patent No. 6,049,440.

Regarding claim 1, 12, and 13, Okamura discloses a method comprising the steps of providing a disk surface that is divided into a plurality of zones (see Fig. 3), the disk surface having a head associated therewith (column 4, lines 23-30).

Okamura also discloses a method comprising the steps of measuring amplitudes of a plurality of AGC fields in a self-test (i.e. self-calibrating) procedure in a first of the plurality of zones and storing a calibrated value which is based upon the measured amplitudes for use in determining whether a high fly height condition exists in the first of the plurality of zones (column 5, line 65 through column 6, line 6). Okamura however fails to show a step of storing the calibrated value onto the disk surface.

However, Shu discloses a method of storing a compensation value onto the surface of a magnetic disk in a reserved sector for the purpose of making accurate corrections in a timely manner when reading a particular sector (i.e. zone) (column 2, line 57 through column 3, line 2 and column 9, lines 34-46).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method disclosed by Okamura with the compensation value method as taught by Shu in order to obtain a method wherein calibrated values are stored onto the disk surface making the stored values associated with a particular zone readily accessible providing the disk drive with a more efficient and rapid fly height detection method.

Regarding claim 2, Okamura discloses a method including the steps of receiving a write command to write a block of data in the first of the plurality of zones (column 7, lines 6-10).

Okamura also discloses a method including the steps of measuring amplitude of an AGC field in the first of a plurality of the plurality of zones in response to the write command and comparing the measured amplitude to the calibrated value (column 7, lines 27-32).

Regarding claim 3, Okamura discloses a method including the steps of writing the block of data onto the disk surface in a data sector associated with the AGC field in the first of the plurality of zones and determining whether the measured amplitude is within a predetermined tolerance in comparison to the calibrated value (column 8, lines 32-43).

Regarding claims 4 and 5, Okamura discloses a method including the steps of re-measuring the amplitude of the AGC field in the first of the plurality of zones when the measured amplitude is outside of the predetermined tolerance in comparison to the calibrated value and (column 8, lines 44-59).

Regarding claim 6, Okamura discloses a method including the step of determining whether a high fly height write flag has been set if the re-measured amplitude is outside of the predetermined tolerance in comparison to the calibrated value (column 9, line 60 through column 10, line 4).

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Regarding claim 11, Okamura discloses a method wherein the calibrated value is an average of the measured amplitudes (column 5, line 65 through column 6, line 6).

Regarding claims 14 and 40, Okamura discloses a method wherein the first of the plurality of zones is a single track (column 4, lines 13-22). Furthermore Okamura teaches that tracks are divided into zones based on the number of the zones, which is undefined in the reference, therefore the limitations are considered to be met by the reference.

Regarding claims 18 and 19, Okamura discloses a method wherein the calibrated value is used as an initial value for a running average of amplitudes of AGC fields within the first of the plurality of zones wherein the running average is made up of a predetermined number of samples of amplitudes of AGC fields within the first of the plurality of zones (column 9, lines 18-46).

Regarding claims 20-26 and 29, claims 20-26 and 29 have limitations similar to those treated in the above rejections of claims 2-8 and 14 respectively, and are met by the references as discussed above.

Regarding claims 33-35, apparatus claims 33-35 are drawn to the apparatus corresponding to the method of using same as claimed in claims 1-14. Therefore apparatus claims 33-35 correspond to method claims 1-14, and are rejected for the same reasons of obviousness as used above.

Regarding claims 36-39, and 41-45, claims 36-39 and 41-45 have limitations similar to those treated in the above rejections of claims 1-14, and are met by the references as discussed above.

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3. Claims 7, 8, 15-17, and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura U.S. Patent No. 5,831,781 as modified by Shu U.S. Patent No. 6,049,440 as applied to claim 3 above, and further in view of Okamura U.S. Patent No. 5,808,825.

Regarding claims 7, and 15-17, Okamura '781 as modified by Shu disclose a method including all the limitations of claim 3 as described above but fail to show a step of performing a burnishing process by allowing the head to contact the disk surface when the measured amplitude is outside of the predetermined tolerance in comparison to the calibrated value.

However, Okamura '825 discloses a method for removing thermal asperities, which are considered to be a cause of low fly height in a disk drive by causing the head to contact the disk surface (column 5, line 59 through column 6, line 12).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method disclosed by Okamura '781 as modified by Shu with the burnishing process as taught by Okamura '825 in order to detect fly height and to eliminate the possible cause of low fly height by removing thermal asperities and further to prevent damaging collision between the head and the disk.

Regarding claim 8, Okamura discloses a method including the step of setting a high fly write flag (column 10, lines 1-4).

Regarding claims 30-32, claims 30-32 have limitations similar to those treated in the above rejections of claims 15-17, and are met by the references as discussed above.

4. Claims 9 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura U.S. Patent No. 5,831,781 as modified by Shu U.S. Patent No. 6,049,440 as applied to claim 6 further in view of Abiko U.S. Patent No. 4,835,757.

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Regarding claim 9, Okamura as modified by Shu disclose a method including all the limitations of claim 6 as discussed above but fail to show a step of writing the block of data to a different data sector on the disk surface if the high fly write flag has been set.

However, Abiko discloses a method wherein data is written to a different substitution designated area upon the disk surface when an error is detected for the purpose of ensuring that the data is written correctly when an error is detected (column 3, lines 16-31 and column 9, line 67 through column 10, line 14).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method disclosed by Okamura as modified by Shu with the method of moving data as taught by Abiko in order to ensure the recording of data on an area of the disk which is free from error and minimize data accessing time by eliminating the need for external memory devices.

Regarding claim 27, claim 27 has limitations similar to those treated in the above rejection of claim 9, and are met by the references as discussed above.

5. Claims 10 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura U.S. Patent No. 5,831,781 as modified by Shu U.S. Patent No. 6,049,440 as applied to claim 6, further in view of Schaff U.S. Patent No. 6,275,029.

Regarding claim 10, Okamura as modified by Shu disclose a method including all the limitations of claim 6 as discussed above but fail to show a step of providing a second disk surface and writing the block of data to a data sector on the second disk surface.

However, Schaff discloses a method for monitoring fly height in a disk drive wherein corrective measures are taken if it is detected that the fly height is below a threshold. A

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corrective measure considered is transferring data from the disk surface to another disk surface for the purpose of preventing loss of data on a defective disk.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method disclosed by Okamura as modified by Shu with the method of detecting fly height as taught by Schaff in order to obtain an effective method for detecting fly height of a head over a disk wherein loss of data is prevented by transferring data from one disk to another.

Regarding claim 28, claim 28 has limitations similar to those treated in the above rejection of claim 10, and are met by the references as discussed above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniell L. Negrón whose telephone number is 703-305-6985. The examiner can normally be reached on Monday-Friday (8:30-6:00) Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on 703-308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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DLN

March 2, 2004



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